

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
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Washington, D.C.20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 23 March 2000 (23.03.00)	
<b>International application No.</b> PCT/GB99/02334	<b>Applicant's or agent's file reference</b> SMC/RC/P4107
<b>International filing date (day/month/year)</b> 20 July 1999 (20.07.99)	<b>Priority date (day/month/year)</b> 20 July 1998 (20.07.98)
<b>Applicant</b> AUSTIN, Kenneth	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

18 February 2000 (18.02.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland	<b>Authorized officer</b>  Pascal Piriou
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

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## TENT COOPERATION TRE ( Y

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NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

ROYSTONS  
Tower Building  
Water Street  
Liverpool, Merseyside L3 1BA  
ROYAUME-UNI

Date of mailing (day/month/year) 23 August 2000 (23.08.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference SMC/RC/P4107	
International application No. PCT/GB99/02334	International filing date (day/month/year) 20 July 1999 (20.07.99)

## 1. The following indications appeared on record concerning:

☒ the applicant    ☐ the inventor    ☐ the agent    ☐ the common representative

## Name and Address

DANMERE LIMITED  
Whitehall  
75 School Lane  
Hartford  
Northwich  
Cheshire CW8 1PF  
United Kingdom

## State of Nationality

GB

## State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person    ☒ the name    ☒ the address    ☐ the nationality    ☐ the residence

## Name and Address

4TV HOUSE  
13-15 Winnington Street  
Northwich  
Cheshire  
CW8 1AQ  
United Kingdom

## State of Nationality

GB

## State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

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The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

I. Britel

Telephone No.: (41-22) 338.83.38

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING  
OF A CHANGE

(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

To:

ROYSTONS  
Tower Building  
Water Street  
Liverpool, Merseyside L3 1BA  
ROYAUME-UNI

Date of mailing (day/month/year) 06 November 2000 (06.11.00)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference SMC/RC/P4107	
International application No. PCT/GB99/02334	International filing date (day/month/year) 20 July 1999 (20.07.99)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

4TV HOUSE  
13-15 Winnington Street  
Northwich  
Cheshire  
CW8 1AQ  
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☒ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

4TV LIMITED  
13-15 Winnington Street  
Northwich  
Cheshire  
CW8 1AQ  
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

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34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

I. Britel

Telephone No.: (41-22) 338.83.38

TENT COOPERATION TRE, )

09/744054

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From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

To:

ROYSTONS  
Tower Building  
Water Street  
Liverpool, Merseyside L3 1BA  
ROYAUME-UNI

Date of mailing (day/month/year) 15 January 2001 (15.01.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference SMC/RC/P4107	
International application No. PCT/GB99/02334	International filing date (day/month/year) 20 July 1999 (20.07.99)

1. The following indications appeared on record concerning:		
<input checked="" type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input type="checkbox"/> the agent
<input type="checkbox"/> the common representative		
Name and Address 4TV LIMITED 13-15 Winnington Street Northwich Cheshire CW8 1AQ United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input type="checkbox"/> the person	<input type="checkbox"/> the name	<input checked="" type="checkbox"/> the address
<input type="checkbox"/> the nationality		
<input type="checkbox"/> the residence		
Name and Address 4TV LIMITED 4TV House 13-15 Winnington Street Northwich Cheshire CW8 1AQ United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
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The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer I. Britel
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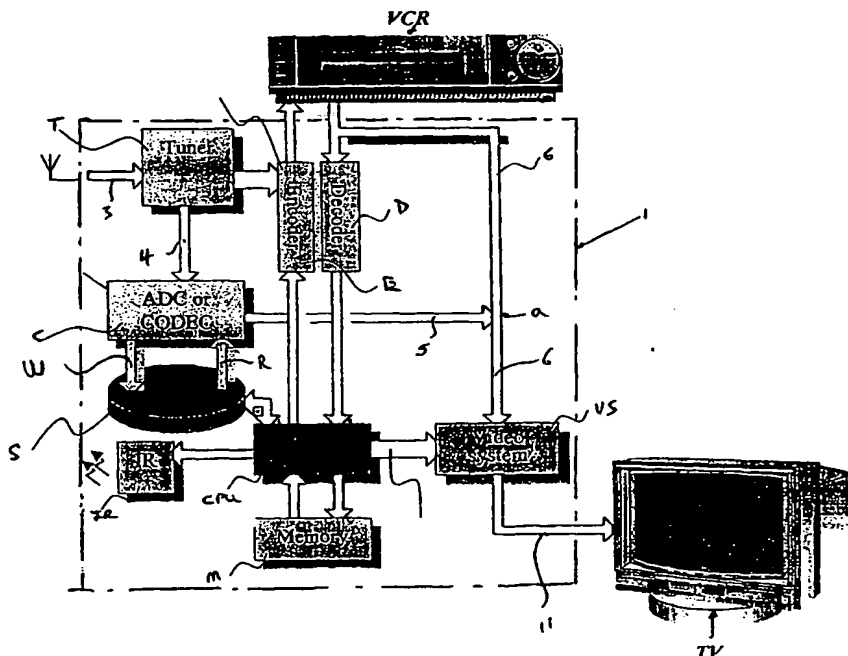
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : <b>H04N 5/76</b>		A1	(11) International Publication Number: <b>WO 00/05880</b>
			(43) International Publication Date: 3 February 2000 (03.02.00)
(21) International Application Number: PCT/GB99/02334 (22) International Filing Date: 20 July 1999 (20.07.99) (30) Priority Data: 9815641.7 20 July 1998 (20.07.98) GB (71) Applicant (for all designated States except US): DANMERE LIMITED [GB/GB]; Whitehall, 75 School Lane, Hartford, Northwich, Cheshire CW8 1PF (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): AUSTIN, Kenneth [GB/GB]; Weaverham Grange, 7 Beechwood Avenue, Hartford, Northwich, Cheshire CW8 3AR (GB). (74) Agent: ROYSTONS; Tower Building, Water Street, Liverpool, Merseyside L3 1BA (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> With international search report. With amended claims.	

(54) Title: IMPROVEMENTS IN AND RELATING TO THE DELAYED VIEWING OF SCREEN READABLE SIGNALS SUCH AS A TELEVISION BROADCAST

(57) Abstract

This invention provides a method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium (s), and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into ascreen readable form and viewing on a television (TV). Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive (r) and process (C, D, E) the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded. The invention also provides a method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.



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Title: Improvements in and relating to the delayed viewing of screen readable signals such as a television broadcast

The present invention relates to method and apparatus facilitating the delayed viewing of a television or video or other screen readable signal.

The invention has particular application to the delayed viewing of a television broadcast. There are occasions when someone viewing a real time television broadcast would benefit from an ability to interrupt viewing of the real time broadcast and to take up viewing sometime later without losing any of the intervening transmission or any transmission occurring when viewing is re-commenced. For example a viewer may be called away from the television momentarily, for example to answer the door or telephone call. Presently the only option is to accept that some of the transmission will be missed until the viewer is able to return to viewing the real time transmission or, if a video cassette recorder is available, to commence recording of the transmission for viewing at a later date when that transmission has finished, where for example the nature of the transmission is such that the viewer would not wish to commence viewing from anywhere other than from where the original interruption took place.

The present invention aims to provide a solution.

Accordingly, one aspect of the invention provides a method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently

reading the recorded signals whilst continuing to record the real time transmissions, and converting the recovered signals into a screen readable form for display and viewing on a television.

Conveniently the recording medium is divided into a plurality of memory blocks which are recorded sequentially. The memory blocks provide a finite capacity of memory. Preferably the method comprises recording in the memory blocks in a sequential fashion on a cyclical basis when viewing has been re-commenced within a time period covered by the finite memory of the digital recording medium. Where the finite capacity of the digital recording medium is about to be exceeded and viewing has not been re-commenced the method further comprises automatically triggering the operation of a video cassette recorder to record the transmitted signals for later viewing. Recording of the digital recording medium may be performed continuously whenever viewing is taking place or solely on operation of a user command for example in the event of an interruption taking place which dictates operation of the interrupt facility. In an alternative embodiment, instigation of the interrupt facility simultaneously instigates operation of a video cassette recorder. Tape positioning may be controlled automatically according to proposals in one of our co-pending patent applications and is not described further herein.

According to another aspect of the invention there is provided apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to read a signal recorded on the storage



medium, the write and read means being operable to permit reading of previously recorded signals whilst subsequently received signals are being recorded.

The digital storage medium conveniently comprises a plurality of recordable segments each having a finite capacity. Means is provided for recording the storage blocks in sequence and in a circulatory manner to record over previously recorded blocks if necessary.

Control means may be provided for instigating write and read functions. An on screen display is preferred from which the viewer can select from available options. Means is provided for identifying where the current write sequence commenced so that a subsequent read command starts at that point. Once reading has commenced the writing and reading can continue on a rolling basis with the read blocks being written over in due course. This is only possible where the read command has commence within a time span which can be accommodated by the finite capacity of the storage medium.

Advantageously the apparatus further comprises means for triggering the operation of a video cassette recorder to record the signal transmission either simultaneously with commencement of the interrupt record facility or at a predetermined time thereafter, for example when the finite storage capacity is about to be exceeded. An infra-red controller is preferably employed. A remote handset provides a convenient means of selecting operation of the video cassette recorder and/or the digital recording medium, preferably in conjunction with an on-screen display of the available functions.

In one embodiment the digital recording medium comprises a hard disk which

can be part of a computer or a set top device. In an alternative embodiment the signal is recorded on a digital video disk provided with both read and write heads which are operable to record and play video without interruption. Preferably, the apparatus further comprises means for digitising analog signals optional means for retrieving external video signals or external data, as well control circuitry for producing text or graphics for display on the TV screen.

Another aspect of the invention provides a method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphics and/or text and/or video images are displayed, re-commencing a delayed read of digitally stored signal and displaying same when prompted or automatically when temporarily on screen graphics and/or text and/or video images are no longer displayed.

The present invention will now be described further hereinafter by way of example only and with reference to the accompanying drawings in which:-

Figure 1 illustrates diagrammatically apparatus for implementing the invention according to a first embodiment,

Figure 2 illustrates diagrammatically apparatus for implementing the invention according to a second embodiment,

Figure 3 illustrates diagrammatically apparatus for implementing the invention according to yet another embodiment,

Figure 4 illustrates diagrammatically a delayed viewing/read facility according

to one aspect of the present invention, and

Figure 5 illustrates diagrammatically read and write features of the invention.

Referring to Figure 1, Illustrated pictorially is a video cassette recorder referenced VCR and a television with monitor screen referenced TV. Illustrated diagrammatically in block form is associated signal processing apparatus which according to a preferred embodiment of the invention is incorporated in a set top box or other stand alone unit represented by dotted outline 1. However, the desired signal processing apparatus may be incorporated in either the VCR or TV or any other component intended to be used with or incorporate one or both a TV or VCR. In other embodiments the connection with the VCR is optional.

The signal processing apparatus comprises a tuner T, an analog digital converter or codec C, a central processing unit CPU, a memory M associated with the CPU and a simultaneously readable and writable digital storage medium comprising a hard disk or other media S. Also illustrated is an infra-red receiver and transmitter IR, a video system VS and encoder and decoder means E and D respectively.

The set top box 1 has an input port 3 to receive television broadcasts or other continuous sequential signal transmission intended for viewing on a VDU or television screen TV. The tuner T decodes the selected broadcast (assumed to be an analog signal in the illustrated embodiment) and transmits it to the analog digital converter C along signal line 4. A corresponding signal is also transmitted either directly to the VCR and the TV or in the case of the illustrated embodiment by way of encoder E. The function of the encoder will be described further hereinafter. The analog digital

converter C converts the signal from the tuner into a digital signal suitable for recording on the digital storage medium, which in case of a set top box comprises a hard disk. A write head and a read head are provided and shown diagrammatically by arrows R and W. The central processing unit runs the installed software and controls operation of the read write functions, the infra-red control unit, the encoder, the decoder and the video system. Appropriate control paths being shown in the diagram. The output to the television is shown at 11. Where the function of the digital converter is required the real time signal finds its way from the input 3 to the output 11 via the tuner, line 4, line 5 and line 6. Where the signal is to be recovered from the hard disk by the read head R it is transmitted to the output by way of lines 5 and 6. Where the TV picture is being recovered from the video cassette recorder it is transmitted to the output by way of line 6 and via the video system in the illustrated embodiment. In an alternative embodiment the output from the VCR could be directed to the analog digital converter to facilitate writing to the hard disk and subsequent delayed retrieval via lines 5 and 6.

In our co-pending applications we describe how file indexes and tape position data can be recorded onto a video tape and techniques for determining tape position and generating on-screen displays for selecting available options. The central processing unit CPU runs software which controls these aspects and those of the present invention and controls the generation or transmission of any on-screen display. The memory M stores the VCR characterisation data, current file index and the control program. The encoder is provided to encode any index information, or other data for recording on the tape and the decoder decodes it for display on the

screen and/or storage memory.

In use, where a television program is being viewed on the television screen and the viewer has to interrupt viewing for whatever reason, he can operate a controller, for example a hand held infra-red controller, to display, in the context of this invention, various menu options on-screen in relation to operation of what we term the interrupt/delayed read facility. In one embodiment where such an option is selected recording of the received television program commences on the hard disk with successive blocks of memory being recorded. The position in the memory where recording is started is noted. The amount of available recording space is known and continuously monitored by the central processing unit. The hard disk maybe capable of storing say 10 minutes worth of broadcast. Thus, if the viewer returns within that time he can then select from the options menu to continue viewing on a delayed viewing basis by instigating a read function whereupon the recorded transmission is read from a point where recording commenced. Writing of the transmission continues as does reading over of the subsequently recorded material until the user de-selects the interrupt/delayed read facility. By this means the viewer does not miss any of the transmission albeit that he views it sometime after its real time transmission.

The ability to view a transmission on a delayed read basis offers a number of additional benefits. For example, whenever the interrupt/delayed read function is operating it is possible to instigate an instant replay function or to perform the equivalent of a short rewind, and replay an earlier section of the transmission albeit that the amount of back tracking which is possible is limited to the amount of

available program memory between the current read position and the current write position. The control unit can also include a fast forward function so that the material which is being read on a delayed read basis can be viewed more quickly or irrelevant material skipped through e.g. commercial breaks; thus enabling the viewer to get up to real time transmission should he so wish.

Further options facilitate operation of the video cassette recorder to record the transmission to video tape either automatically if viewing is not commenced within the limitations of the capacity of the digital storage medium or instantly if this is preferred. The control of the video tape position to ensure adequate space can be achieved in a manner described in our co-pending applications and is not described further hereinafter.

Reference is now made to Figure 2 which shows an embodiment of the invention which uses a digital video disk as the digital storage medium. The digital video disk (DVD) is provided with write and read heads W and R respectively which are able to function simultaneously. In the illustrated embodiment it is assumed that the signal being received is a digital television signal which goes directly into a digital receiver DR which is then relayed to the digital video disk for recording purposes or directly to line 6 which carries the TV picture signal to the output line 11 by way of a video system VS. The circuitry further includes a central processing unit (CPU) a memory M, and an infra-red controller IR to receive controls from a hand set. These function as described previously in the context of the invention and as concerns generation of on-screen displays in relation to indexes stored in memory and selectable programming options. In the illustrated embodiment optional inputs are

shown at X and Y feeding an interface I and then into a coder C. Input X represents an external video signal and input Y an external data signal.

In operation the digital signal is decoded and the viewer can watch the decoded signal on the television monitor in the usual way. Again the control unit CPU can be used to generate text or graphics for on-screen viewing, these being relayed to the video system via line 8. Using an on-screen menu the user can select to instigate the interrupt/delayed read procedures in which case the signal can be written to the digital video disk when in the interrupt mode. Again, as with the previous embodiment the recordable digital video disk has a finite capacity. Where this not exceeded the viewer has the option to commence reading of the recorded material where after writing and reading is performed on the same basis as previously described.

Where the optional inputs are available then the control unit can be used to control recording of external video signals and/or external data onto the recordable digital video disk for subsequent replay on a delayed transmission basis or otherwise.

Figure 3 illustrates an embodiment which corresponds almost exactly to that of Figure 2 and like reference numerals have been used for corresponding parts but in this instance the television broadcast is assumed to be an analog signal which is decoded by tuner T passed along line 4 to the coder C where it is digitised and then passed to the recordable digital video disk DVD to be written to the disk where required. Again on-screen menus are used as described previously to facilitate easy operation of the system.

Referring now to Figure 4, here we illustrate diagrammatically an arrangement

which operates continuously on a delayed read basis. A recordable digital video disk DVD is interposed in a signal line 3 receiving real time television broadcasts and which feeds to the write head of the digital video disk. Processing circuitry is omitted for clarity. The information recorded is read after a predetermined (usually preset) interval by the read head and fed on a delayed read basis to the television TV along line 5. The intention here is to have this operating on a full-time basis so that the viewer is able to benefit from instant replays and also potential rewinds and fast-forwards in the jargon of tape recording. Thus as illustrated schematically in Figure 5 the digital disk may contain N segments of recordable memory which may have a total capacity equivalent to 10 minutes of video transmission and this is recorded on a continuous loop basis as indicated by arrow A. The memory can be retrieved for anything up to 10 minutes behind the real time transmission. In practice the read position is preferably just less than 10 minutes ahead of the record position to facilitate operation of fast-forward and rewind facilities, especially replay, without losing transmission continuity. Once a memory segment has been read it will be over-written in due course.



CLAIMS

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.
6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to

read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded.

7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 and further comprising control means to initiate operation of a video cassette recorder on commencement of the write command or at a prescribed interval thereafter.
12. Apparatus as claimed in claim 11 in which actuation of the video cassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or

text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.

15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

**AMENDED CLAIMS**

[received by the International Bureau on 14 January 2000 (14.01.00);  
original claims 1, 6 and 11 amended; remaining claims unchanged (3 pages)]

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television, and further comprising at least one of: -
  - 1) automatically recording the continuous sequential signal transmission when other temporary text and/or graphics are present on screen;
  - 2) automatically instigating operation of a video cassette recorder to act as a supplemental storage medium for the continuous sequential signal transmission.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.

6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded and further comprising at least one of: -
  - 1) means to trigger automatic recording of the continuous sequential signal transmission when other temporary text and/or graphics are present on screen;
  - 2) control means automatically instigate operation of a video cassette recorder to act as a supplemental storage medium for the continuous sequential signal transmission.
7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 in which the control means initiates operation of a video cassette recorder on commencement of the write

command or at a prescribed interval thereafter.

12. Apparatus as claimed in claim 11 in which actuation of the video cassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.
15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

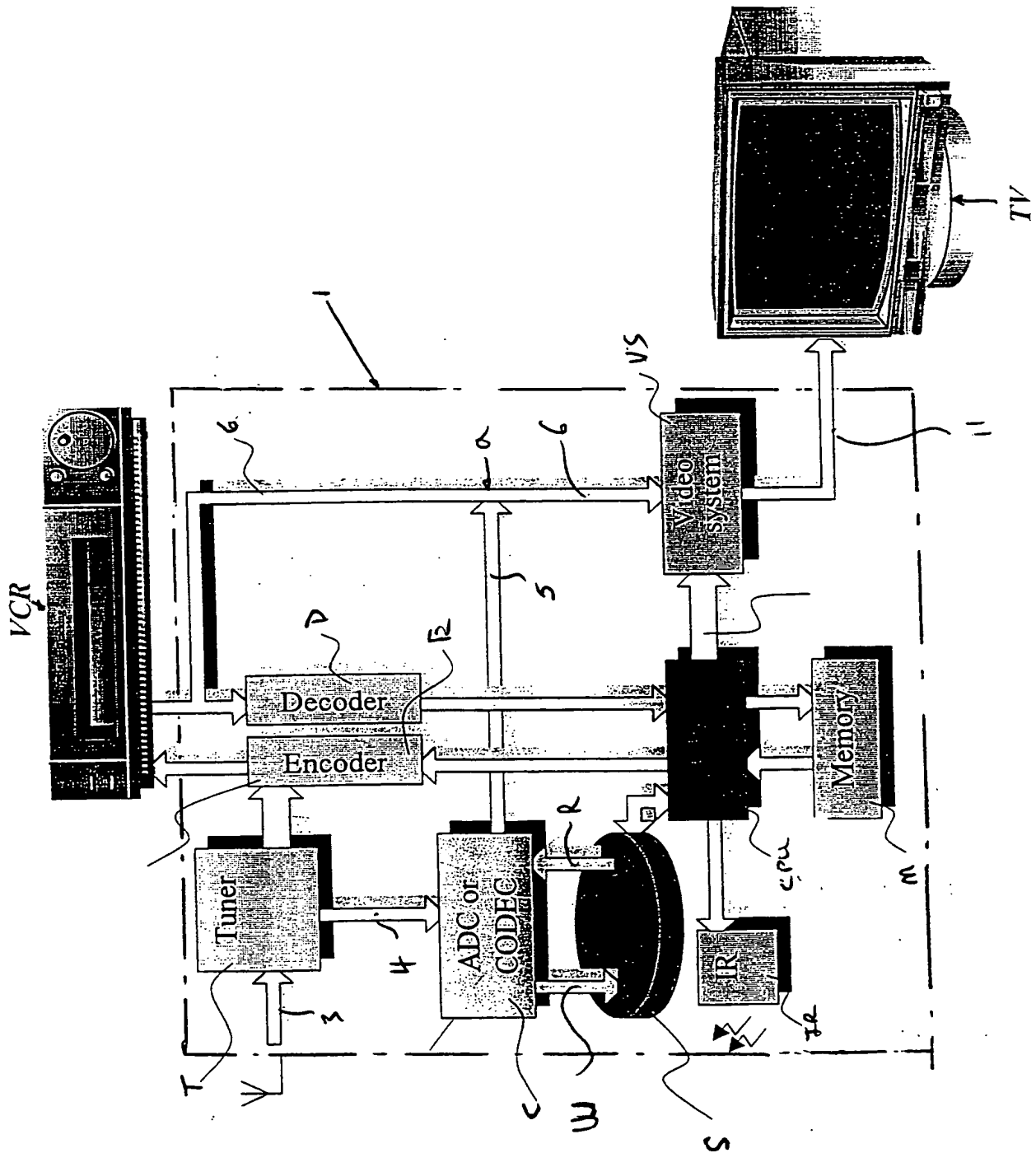


Fig 1

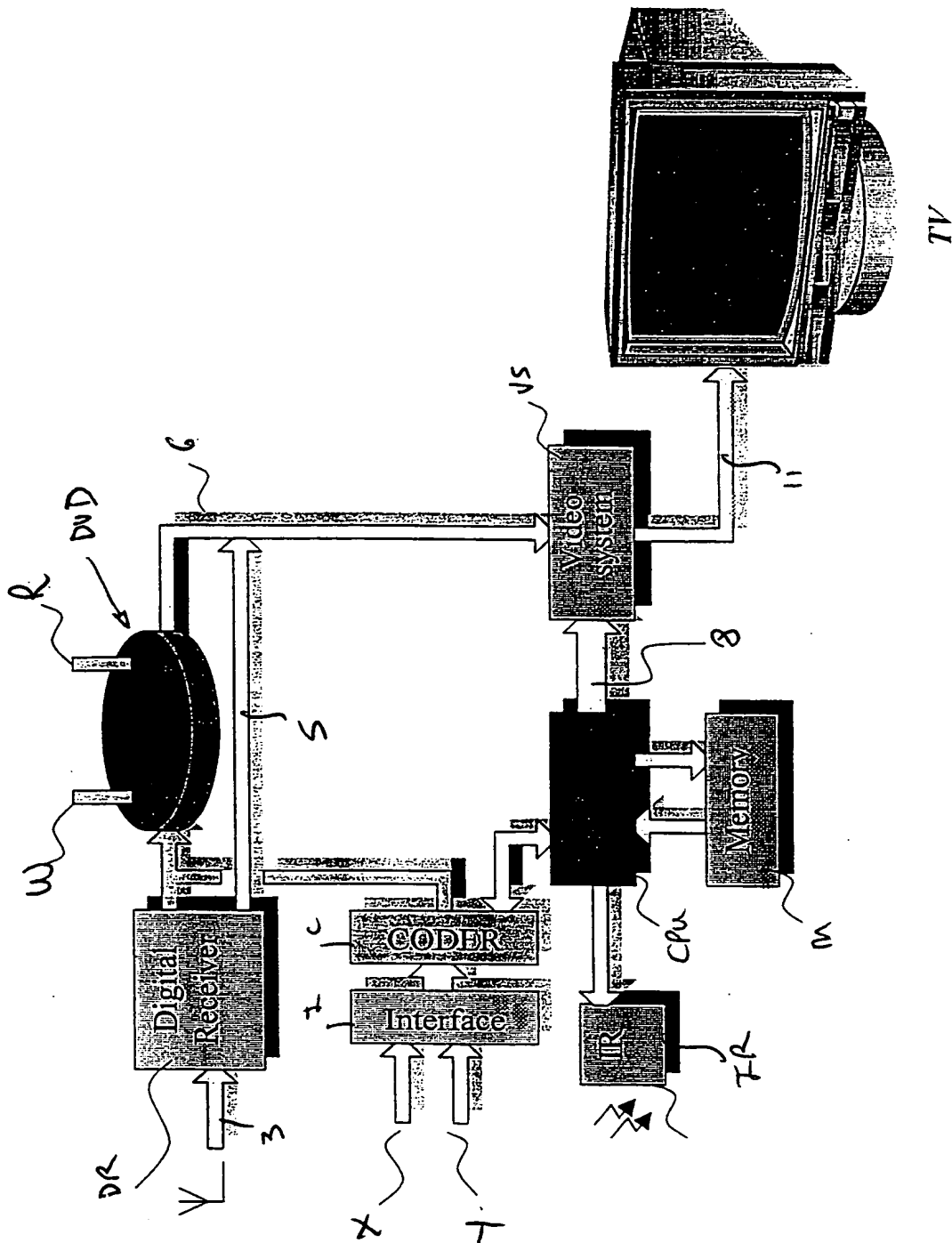


Fig 2



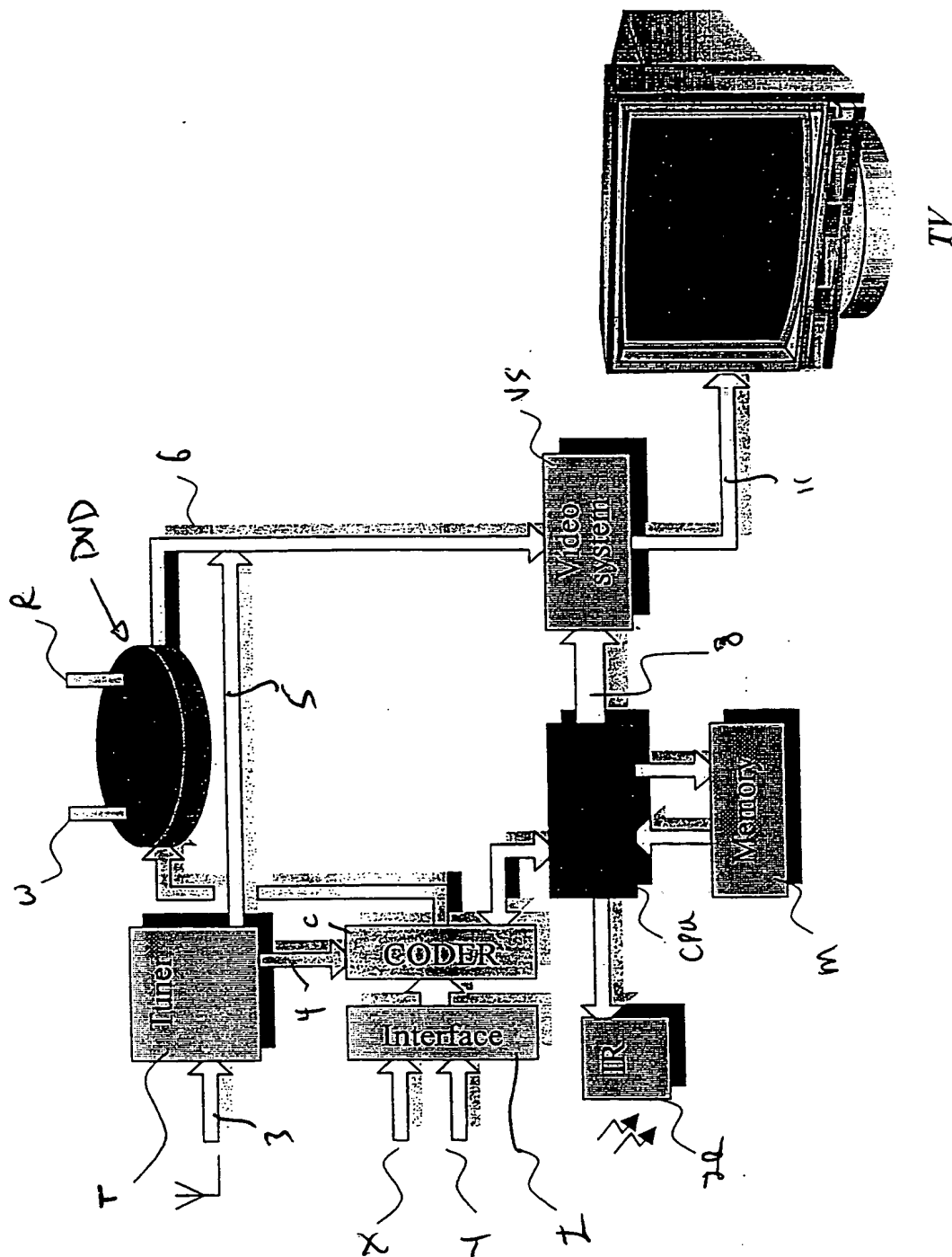


Fig 3

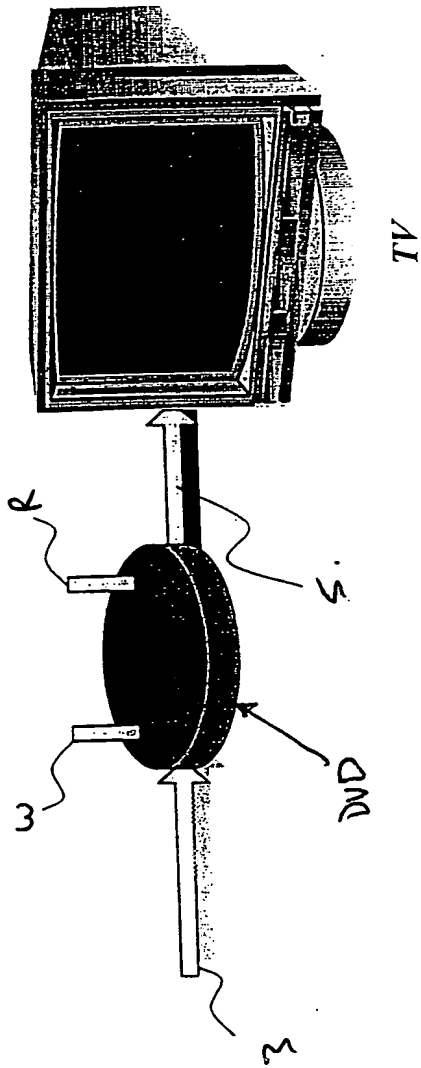


Fig 4

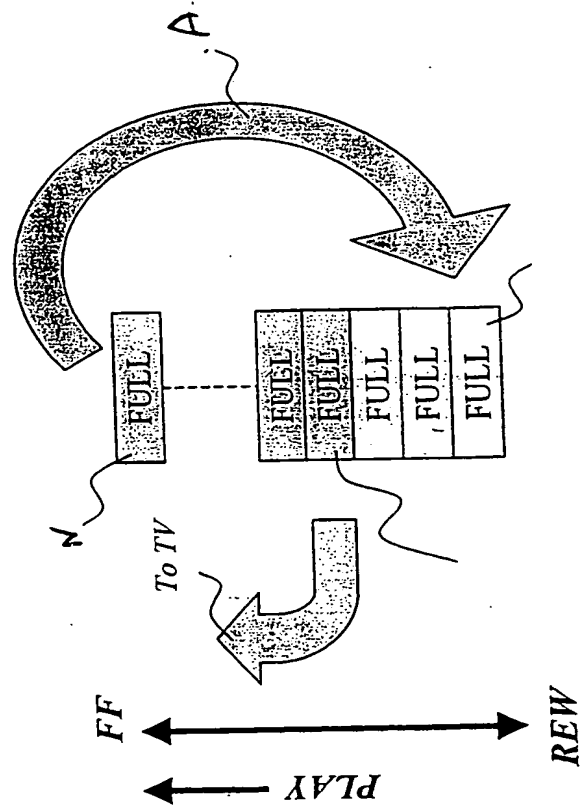


Fig 5

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 99/02334

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H04N5/76

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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Y	the whole document	12, 14
X	WO 98 25404 A (INTERVAL RESEARCH CORPORATION) 11 June 1998 (1998-06-11)	1-3, 5-10, 13, 15, 16
Y	page 10, line 18 -page 20, line 20; figures 1-3	12, 14

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- "O" document referring to an oral disclosure, use, exhibition or other means
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Date of the actual completion of the international search

9 November 1999

Date of mailing of the international search report

16/11/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Verleye, J

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/02334

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 713 334 A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.) 22 May 1996 (1996-05-22) column 7, line 39 -column 10, line 14; figures 1-3B	1-3, 6-8, 10, 15, 16
A	-----	14

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/02334

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5438423 A	01-08-1995	JP 7107439 A	21-04-1995
WO 9825404 A	11-06-1998	US 5825354 A	20-10-1998
		AU 5515598 A	29-06-1998
EP 713334 A	22-05-1996	CN 1151081 A	04-06-1997
		JP 8237592 A	13-09-1996
		US 5822493 A	13-10-1998

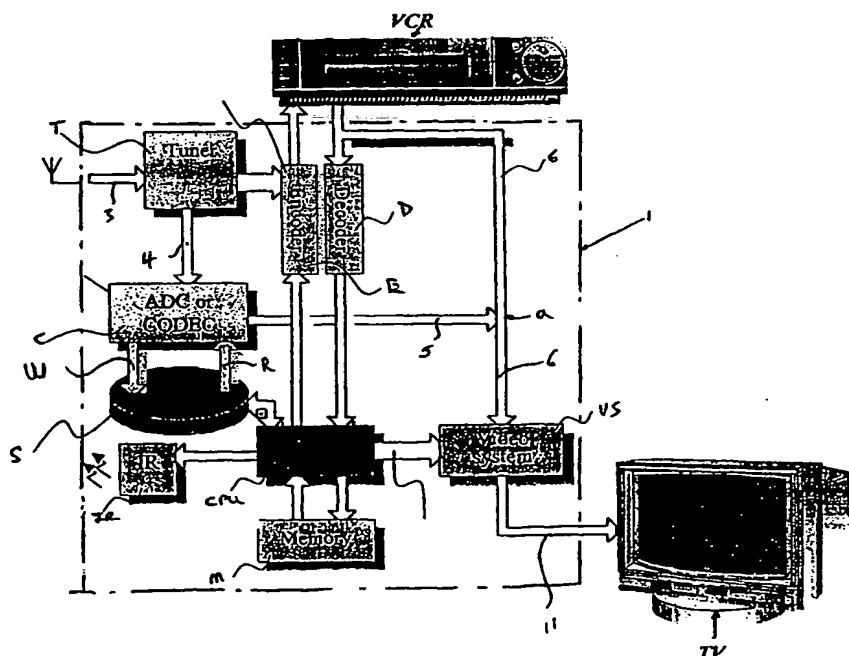
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>H04N 5/76</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/05880</b> <b>(43) International Publication Date:</b> 3 February 2000 (03.02.00)
<b>(21) International Application Number:</b> PCT/GB99/02334 <b>(22) International Filing Date:</b> 20 July 1999 (20.07.99) <b>(30) Priority Data:</b> 9815641.7                      20 July 1998 (20.07.98)                      GB <b>(71) Applicant (for all designated States except US):</b> DANMERE LIMITED [GB/GB]; Whitehall, 75 School Lane, Hartford, Northwich, Cheshire CW8 1PF (GB). <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> AUSTIN, Kenneth [GB/GB]; Weaverham Grange, 7 Beechwood Avenue, Hartford, Northwich, Cheshire CW8 3AR (GB). <b>(74) Agent:</b> ROYSTONS; Tower Building, Water Street, Liverpool, Merseyside L3 1BA (GB).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>With amended claims.</i>

**(54) Title:** IMPROVEMENTS IN AND RELATING TO THE DELAYED VIEWING OF SCREEN READABLE SIGNALS SUCH AS A TELEVISION BROADCAST

**(57) Abstract**

This invention provides a method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium (s), and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into ascreen readable form and viewing on a television (TV). Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive (r) and process (C, D, E) the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded. The invention also provides a method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.



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International Application No

PCT/GB 99/02334

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			JP 8237592	A	13-09-1996
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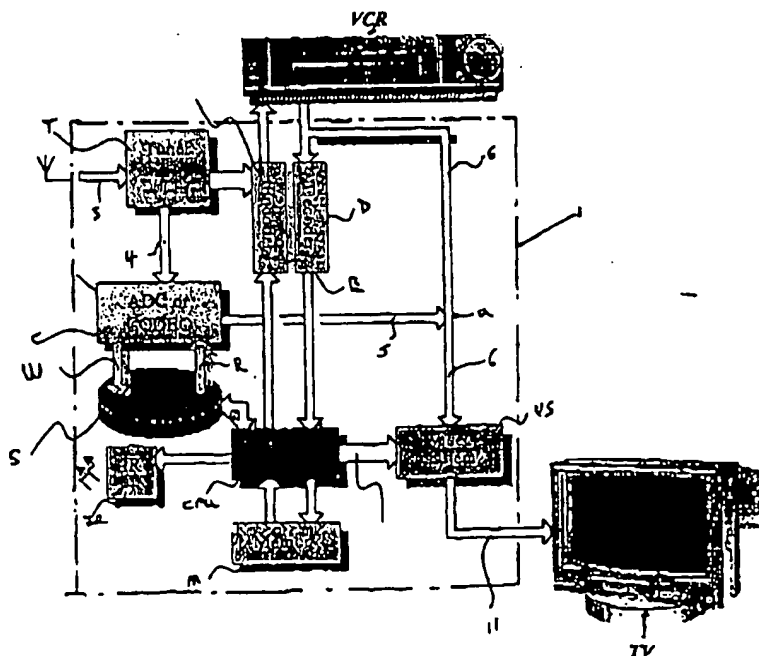
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			(43) International Publication Date: <b>3 February 2000 (03.02.00)</b>
(21) International Application Number: <b>PCT/GB99/02334</b>		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: <b>20 July 1999 (20.07.99)</b>			
(30) Priority Data: <b>9815641.7</b> <b>20 July 1998 (20.07.98)</b> <b>GB</b>			
(71) Applicant (for all designated States except US): <b>DANMERE LIMITED [GB/GB]; Whitehall, 75 School Lane, Hartford, Northwich, Cheshire CW8 1PF (GB).</b>			
(72) Inventor; and (75) Inventor/Applicant (for US only): <b>AUSTIN, Kenneth [GB/GB]; Weaverham Grange, 7 Beechwood Avenue, Hartford, Northwich, Cheshire CW8 3AR (GB).</b>			
(74) Agent: <b>ROYSTONS; Tower Building, Water Street, Liverpool, Merseyside L3 1BA (GB).</b>		Published With international search report. With amended claims.	

(54) Title: **IMPROVEMENTS IN AND RELATING TO THE DELAYED VIEWING OF SCREEN READABLE SIGNALS SUCH AS A TELEVISION BROADCAST**

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This invention provides a method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium (s); and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television (TV). Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive (r) and process (C, D, E) the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded. The invention also provides a method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.



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Fax: (+31-70) 340-3016

Authorized officer

Verleye, J

## INTERNATIONAL SEARCH REPORT

Int. Application No.

PCT/GB 99/02334

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A		14

**INTERNATIONAL SEARCH REPORT**

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EP 713334	A	22-05-1996	CN 1151081 A	04-06-1997
			JP 8237592 A	13-09-1996
			US 5822493 A	13-10-1998

# PATENT COOPERATION TREATY

From the:  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

ROYSTONS  
Tower Building, Water Street  
Liverpool L3 1BA  
Merseyside  
GRANDE BRETAGNE

FILE No <b>PA107</b>	TECHNICAL <b>SMC</b>
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## PCT

### WRITTEN OPINION

(PCT Rule 66)

Applicant's or agent's file reference <b>SMC/LF/PA107</b>		Date of mailing (day/month/year) <b>21.03.2000</b>
International application No. <b>PCT/GB99/02334</b>		REPLY DUE <b>within 3 month(s)</b> from the above date of mailing
International filing date (day/month/year) <b>20/07/1999</b>	Priority date (day/month/year) <b>20/07/1998</b>	
International Patent Classification (IPC) or both national classification and IPC <b>H04N5/76</b>		
Applicant <b>DANMERE LIMITED et al.</b>		

1. This written opinion is the first drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain document cited
  - VII ☐ Certain defects in the international application
  - VIII ☒ Certain observations on the international application
3. The applicant is hereby invited to reply to this opinion.
 

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also:** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: **20/11/2000**.

Name and mailing address of the international preliminary examining authority:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized officer / Examiner

Luckett, P

Formalities officer (incl. extension of time limits)  
Stannartz, B  
Telephone No. +49 89 2399 8242



**WRITTEN OPINION**

International application No. PCT/GB99/02334

**I. Basis of the opinion**

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".*).

**Description, pages:**

1-10 as originally filed

**Claims, No.:**

1-16 as originally filed

**Drawings, sheets:**

1/4-4/4 as originally filed

**2. The amendments have resulted in the cancellation of:**

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

**4. Additional observations, if necessary:****V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	1-16	YES
Inventive step (IS)	Claims	1-16	NO
Industrial applicability (IA)	Claims	1-16	YES

**2. Citations and explanations**

see separate sheet



**WRITTEN OPINION**International application No. PCT/GB99/02334

---

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**WRITTEN OPINION  
SEPARATE SHEET**

International application No. PCT/GB99/02334

**Re Item V****Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1 The subject matter of all claims concerns the automatic control of recording received signals for viewing on screen. It thus exhibits a technical character and can therefore be considered to meet the requirements of **industrial applicability** set out in the PCT

2 All claims lack an **inventive step** (Article 33(3) PCT) having regard to the state of the art as disclosed in:-

D1: US-A-5 438 423 (LYNCH ET AL.) 1 August 1995 (1995-08-01)

D2: WO 98 25404 A (INTERVAL RESEARCH CORPORATION) 11 June 1998  
(1998-06-11)

3 In D1 time warping for video viewing is achieved by providing a random access dynamic buffer for a video signal from a selected video channel. The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the realtime video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer. In addition the viewer may view the video at various speeds and skip to any point in the stored information. Portions of the video signal in the dynamic buffer may be stored in a static buffer **or transferred permanently to a video cassette recorder** for subsequent manipulation by the viewer. To expand the capacity of the dynamic buffer a compression circuit may be provided for compressing the video signal before being written into the dynamic buffer. Likewise a decompression circuit for the compressed video signal from the dynamic buffer reconstructs a full bandwidth video signal for display.

4 In so far as they have any clear technically limiting effect over the disclosure of D1, minor linguistic or technical differences between the independent claims 1, 6 and 14 and the prior art of D1, (e.g. "automatically recording", "automatically instigating", "means to trigger", control means to "automatically instigate" VTR

**WRITTEN OPINION  
SEPARATE SHEET**

International application No. PCT/GB99/02334

recording) all concern routine measures normally to be expected of a skilled person and therefore are not considered to imply an inventive step.

- 5 The D2 system enables the display of an image to be paused, then, at the end of the pause, resumed at an accelerated rate until a time at which the content of the display corresponds to the content that would have been displayed had the image been displayed at the normal display rate without the pause, at which time display of the image at the normal display rate resumes.
- 6 Compared with this state of the art, the dependent claims also relate to routine measures normally to be expected of a skilled person and also lack inventive step.

**Re Item VIII****Certain observations on the international application**

- 7 It is not at present apparent which part of the application could serve as a basis for a new claim. Should the applicant nevertheless regard some particular matter as patentable an independent claim including such particular matter should be filed. The applicant should also indicate in the letter of reply the difference vis à vis the state of the art and the significance thereof.
- 8 The independent claim/s/ should be cast in the two part form, with those features which in combination are part of the prior art (see document D1) being placed in the preamble. **This considered to be particularly appropriate** in the present case as it is regarded as essential to establishing a clear picture of the contribution made by the applicants vis-a-vis the closely relevant subject matter known from D1.
- 9 Claims 15 and 16 (including unnecessary references to the description and drawings) are so-called "omnibus" claims which are not permitted by some patent granting authorities.
- 10 The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

**WRITTEN OPINION  
SEPARATE SHEET**

International application No. PCT/GB99/02334

- 11 The description should be brought into conformity with the any new claims filed; care should be taken during revision, especially of the introductory portion including any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed.
- 12 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein. To reflect the state of the art adequately in the description, the document D1 should be identified in the opening pages and the relevant background art disclosed therein should be briefly discussed.
- 13 In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify the amendments carried out, no matter whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based (see also Rule 66.8(a) PCT). If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.



Chartered Patent Attorneys European Patent Attorneys  
Trade Mark Attorneys  
Patents, Trade Marks, Designs

A. J. Lyons BSc MIMA RTMA CPA EPA  
S. M. Corbridge BSc RTMA CPA EPA  
J. D. Rowledge BSc MSc RTMA RTMA  
A. R. Pearce BSc CPA EPA

K. J. Lees BSc MSc CPA EPA  
A. J. Rowledge LL.B  
V. Christie BSc

Consultants:  
J. S. Roberts MSc PhD CPA  
F. A. Clifford BSc CPA EPA

TOWER BUILDING, WATER STREET,  
LIVERPOOL,  
L3 1BA.

Tel: 0151-238 5147 & 1417

Fax: 0151-236 2244 & 1247

E-mail: admin@roystons.co.uk

Cables: Inventions Liverpool

International Preliminary Examining Authority  
European Patent Office  
Erhardstrasse 27  
Munchen D-80298  
Germany

Our Ref. SMC/LF/P4107

Your Ref.

Date 20 June, 2000

By Fax & Post

Dear Sirs

Re: PCT Patent Application No. PCT/GB98/03140  
Interactive Television Control/Operating System and others  
Danmere Limited (P4126)

This letter is responsive to the Written Opinion dated 21<sup>st</sup> March 2000. We enclose an amended set of claims in which claims 1, 6 and 14 have been amended.

We have carefully considered the examiner's comments and would respectfully submit that claims 1, 6 and 14 distinguish the invention over the prior art and render the claims both novel and inventive. Claims 1, 6 and 14 refer to automatically recording a continuous sequential signal transmission when other temporary text and/or graphics are present on the screen. There is no mention of this in the prior art and this requirement is not something which could be regarded as obvious. Therefore the concept of automatically instigating recording of the continuous sequential signal transmission when other temporary text and/or graphics are present on screen should be viewed as inventive.

Further consideration of the patentability of the claims is respectfully requested. It is proposed to delay amendment of the description until the National Phase.

Yours faithfully

ROYSTONS

Enc

### CLAIMS

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television, and characterised by automatically recording the continuous sequential signal transmission when other temporary text and/or graphics are present on screen.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.
6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output,

means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded and characterised by means to trigger automatic recording of the continuous sequential signal transmission when other temporary text and/or graphics are present on screen.

7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 in which the control means initiates operation of a video cassette recorder on commencement of the write command or at a prescribed interval thereafter.
12. Apparatus as claimed in claim 11 in which actuation of the videocassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon

selection of additional on screen menus, means being provided for temporarily displaying on screen graphics and/or text and/or video images, and the method comprising recording a version of the continuous signal transmission onto a digital storage medium, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed, and characterised in that the recording of the continuous signal transmission is commenced automatically when additional temporarily on screen graphic and/or text and/or video images are displayed.

15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.




## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>SMC/LF/P4107</b>		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. <b>PCT/GB99/02334</b>	International filing date (day/month/year) <b>20/07/1999</b>	Priority date (day/month/year) <b>20/07/1998</b>	
International Patent Classification (IPC) or national classification and IPC <b>H04N5/76</b>			
Applicant <b>DANMERE LIMITED et al.</b>			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>			
Date of submission of the demand <b>18/02/2000</b>		Date of completion of this report <b>06.09.2000</b>	
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523856 epmu d Fax: +49 89 2399 - 4465		Authorized officer  <b>Luckett, P</b>  Telephone No. +49 89 2399 8965	



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**International application No. **PCT/GB99/02334****1. Basis of the report**

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

**Description, pages:**

1-10 as originally filed

**Claims, No.:**

1-16 as received on 23/06/2000 with letter of 20/06/2000

**Drawings, sheets:**

1/4-4/4 as originally filed

**2. The amendments have resulted in the cancellation of:**

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

**4. Additional observations, if necessary:**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**International application No. **PCT/GB99/02334****V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Yes:	Claims 2-16
	No:	Claims 1
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-16
Industrial applicability (IA)	Yes:	Claims 1-16
	No:	Claims

**2. Citations and explanations****see separate sheet****VIII. Certain observations on the International application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY**

International application No. PCT/GB99/02334

**EXAMINATION REPORT - SEPARATE SHEET**

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**Re Item V****Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 1 The subject matter of claim 1 is anticipated (Article 33(2) PCT) by the disclosure of :-

D1: US-A-5 438 423 (LYNCH ET AL.) 1 August 1995 (1995-08-01)

- 2 In D1 time warping for video viewing is achieved by providing a random access dynamic buffer for a video signal from a selected video channel. The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the real-time video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer. In addition the viewer may view the video at various speeds and skip to any point in the stored information. Portions of the video signal in the dynamic buffer may be stored in a static buffer or transferred permanently to a video cassette recorder for subsequent manipulation by the viewer. To expand the capacity of the dynamic buffer a compression circuit may be provided for compressing the video signal before being written into the dynamic buffer. Likewise a decompression circuit for the compressed video signal from the dynamic buffer reconstructs a full bandwidth video signal for display.

- 3 The characterising part of claim 1 merely defines

"... automatically recording ... when other temporary text ... are present on screen".

This characterising clause does not specify that such automatic recording **does not** take place automatically in other circumstances. In the D1 system, the recording goes on continuously and "automatically" regardless of what is displayed on screen. As such it anticipates claim 1 in that this also includes times "... when other ... text ... are ... on screen".

**INTERNATIONAL PRELIMINARY**

International application No. PCT/GB99/02334

**EXAMINATION REPORT - SEPARATE SHEET**

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- 4 All other claims lack an inventive step (Article 33(3) PCT) having regard to the state of the art as disclosed in:-

D1: US-A-5 438 423 (LYNCH ET AL.) 1 August 1995 (1995-08-01)

D2: WO 98 25404 A (INTERVAL RESEARCH CORPORATION) 11 June 1998 (1998-06-11)

- 5 The D2 system enables the display of an image to be paused, then, at the end of the pause, resumed at an accelerated rate until a time at which the content of the display corresponds to the content that would have been displayed had the image been displayed at the normal display rate without the pause, at which time display of the image at the normal display rate resumes.
- 6 The independent claims 6 and 14 are not anticipated by the D1 system as these claims go a step further in their respective characterising clause. In apparatus claim 6 "... means to trigger ..." imply that the recording only takes place in the special circumstances defined, and in method claim 14 a similar provision is defined by the clause "...recording ... is commenced ...". However, these additional features are considered to be trivial design aspects normally to be expected of a skilled person.
- 7 Compared with the cited state of the art, the dependent claims also relate to routine measures normally to be expected of a skilled person and also lack inventive step.
- 8 The subject matter claimed is considered to be industrially applicable. Time warped viewing facilities require considerable technical effort to realise and constitute a valued technical enhancement to pictorial communication systems.

**Re Item VIII****Certain observations on the international application**

- 9 Claims 15 and 16 (including unnecessary references to the description and drawings) are so-called "omnibus" claims which are not permitted by some patent

**INTERNATIONAL PRELIMINARY**

International application No. PCT/GB99/02334

**EXAMINATION REPORT - SEPARATE SHEET**

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granting authorities.

- 10 The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 11 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein. To reflect the state of the art adequately in the description, the document D1 should be identified in the opening pages and the relevant background art disclosed therein should be briefly discussed.

ART 34 AMDT

CLAIMS

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television, and characterised by automatically recording the continuous sequential signal transmission when other temporary text and/or graphics are present on screen.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.
6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output,

means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded and characterised by means to trigger automatic recording of the continuous sequential signal transmission when other temporary text and/or graphics are present on screen.

7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 in which the control means initiates operation of a video cassette recorder on commencement of the write command or at a prescribed interval thereafter.
12. Apparatus as claimed in claim 11 in which actuation of the videocassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon



selection of additional on screen menus, means being provided for temporarily displaying on screen graphics and/or text and/or video images, and the method comprising recording a version of the continuous signal transmission onto a digital storage medium, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed, and characterised in that the recording of the continuous signal transmission is commenced automatically when additional temporarily on screen graphic and/or text and/or video images are displayed.

15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

## PATENT COOPERATION TREATY

PCT

NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:

ROYSTONS  
Tower Building  
Water Street  
Liverpool, Merseyside L3 1BA  
ROYAUME-UNI

Date of mailing (day/month/year) 03 February 2000 (03.02.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference SMC/RC/P4107			
International application No. PCT/GB99/02334	International filing date (day/month/year) 20 July 1999 (20.07.99)	Priority date (day/month/year) 20 July 1998 (20.07.98)	
Applicant DANMERE LIMITED et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
- AU,CN,EP,IL,JP,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
- AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CU,CZ,DE,DK,EA,EE,ES,FI,GB,GD,GE,GH,GM,HR,  
HU,ID,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,  
SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW
- The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).
3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
03 February 2000 (03.02.00) under No. WO 00/05880

## REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

## REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO— 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

## PATENT COOPERATION TREATY

PCT

INFORMATION CONCERNING ELECTED  
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

From the INTERNATIONAL BUREAU

To:

ROYSTONS  
Tower Building  
Water Street  
Liverpool, Merseyside L3 1BA  
ROYAUME-UNI

Date of mailing (day/month/year)  
23 March 2000 (23.03.00)

Applicant's or agent's file reference  
SMC/RC/P4107

## IMPORTANT INFORMATION

International application No.  
PCT/GB99/02334

International filing date (day/month/year)  
20 July 1999 (20.07.99)

Priority date (day/month/year)  
20 July 1998 (20.07.98)

Applicant  
DANMERE LIMITED et al

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NI, PT, SE

National : AU, BG, BR, CA, CN, CZ, DE, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National : AE, AL, AM, AT, AZ, BA, BB, BY, CH, CU, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MW, MX, PT, SD, SG, SI, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer:

Pascal Piriou

Facsimile No. (41-22) 740.14.35

Telephone No. (41-22) 740.14.35

CLAIMS

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.
6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to

read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded.

7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 and further comprising control means to initiate operation of a video cassette recorder on commencement of the write command or at a prescribed interval thereafter.
12. Apparatus as claimed in claim 11 in which actuation of the video cassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or

text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.

15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

**AMENDED CLAIMS**

[received by the International Bureau on 14 January 2000 (14.01.00);  
original claims 1, 6 and 11 amended; remaining claims unchanged (3 pages)]

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television, and further comprising at least one of: -
  - 1) automatically recording the continuous sequential signal transmission when other temporary text and/or graphics are present on screen;
  - 2) automatically instigating operation of a video cassette recorder to act as a supplemental storage medium for the continuous sequential signal transmission.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.

6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded and further comprising at least one of: -
  - 1) means to trigger automatic recording of the continuous sequential signal transmission when other temporary text and/or graphics are present on screen;
  - 2) control means automatically instigate operation of a video cassette recorder to act as a supplemental storage medium for the continuous sequential signal transmission.
7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 in which the control means initiates operation of a video cassette recorder on commencement of the write



command or at a prescribed interval thereafter.

12. Apparatus as claimed in claim 11 in which actuation of the video cassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.
15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

REC'D 12 SEP 2000

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>SMC/LF/P4107</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/GB99/02334</b>	International filing date (day/month/year) <b>20/07/1999</b>	Priority date (day/month/year) <b>20/07/1998</b>
International Patent Classification (IPC) or national classification and IPC <b>H04N5/76</b>		
Applicant <b>DANMERE LIMITED et al.</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  <b>18/02/2000</b>	Date of completion of this report  <b>06.09.2000</b>
Name and mailing address of the international preliminary examining authority:   <b>European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465</b>	Authorized officer  <b>Luckett, P</b>  Telephone No. +49 89 2399 8965  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/02334

**I. Basis of the report**

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

**Description, pages:**

1-10 as originally filed

**Claims, No.:**

1-16 as received on 23/06/2000 with letter of 20/06/2000

**Drawings, sheets:**

1/4-4/4 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/02334

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	2-16
	No:	Claims	1
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-16
Industrial applicability (IA)	Yes:	Claims	1-16
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 1 The subject matter of claim 1 is anticipated (Article 33(2) PCT) by the disclosure of :-

D1: US-A-5 438 423 (LYNCH ET AL.) 1 August 1995 (1995-08-01)

- 2 In D1 time warping for video viewing is achieved by providing a random access dynamic buffer for a video signal from a selected video channel. The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the real-time video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer. In addition the viewer may view the video at various speeds and skip to any point in the stored information. Portions of the video signal in the dynamic buffer may be stored in a static buffer or transferred permanently to a video cassette recorder for subsequent manipulation by the viewer. To expand the capacity of the dynamic buffer a compression circuit may be provided for compressing the video signal before being written into the dynamic buffer. Likewise a decompression circuit for the compressed video signal from the dynamic buffer reconstructs a full bandwidth video signal for display.

- 3 The characterising part of claim 1 merely defines

"... automatically recording ... when other temporary text ... are present on screen".

This characterising clause does not specify that such automatic recording **does not** take place automatically in other circumstances. In the D1 system, the recording goes on continuously and "automatically" regardless of what is displayed on screen. As such it anticipates claim 1 in that this also includes times "... when other ... text ... are ... on screen".

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB99/02334

- 4 All other claims lack an inventive step (Article 33(3) PCT) having regard to the state of the art as disclosed in:-

D1: US-A-5 438 423 (LYNCH ET AL.) 1 August 1995 (1995-08-01)

D2: WO 98 25404 A (INTERVAL RESEARCH CORPORATION) 11 June 1998 (1998-06-11)

- 5 The D2 system enables the display of an image to be paused, then, at the end of the pause, resumed at an accelerated rate until a time at which the content of the display corresponds to the content that would have been displayed had the image been displayed at the normal display rate without the pause, at which time display of the image at the normal display rate resumes.
- 6 The independent claims 6 and 14 are not anticipated by the D1 system as these claims go a step further in their respective characterising clause. In apparatus claim 6 "... means to trigger ..." imply that the recording only takes place in the special circumstances defined, and in method claim 14 a similar provision is defined by the clause "...recording ... is commenced ...". However, these additional features are considered to be trivial design aspects normally to be expected of a skilled person.
- 7 Compared with the cited state of the art, the dependent claims also relate to routine measures normally to be expected of a skilled person and also lack inventive step.
- 8 The subject matter claimed is considered to be industrially applicable. Time warped viewing facilities require considerable technical effort to realise and constitute a valued technical enhancement to pictorial communication systems.

**Re Item VIII**

**Certain observations on the international application**

- 9 Claims 15 and 16 (including unnecessary references to the description and drawings) are so-called "omnibus" claims which are not permitted by some patent

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB99/02334

granting authorities.

- 10 The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 11 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein. To reflect the state of the art adequately in the description, the document D1 should be identified in the opening pages and the relevant background art disclosed therein should be briefly discussed.

## CLAIMS

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television, and characterised by automatically recording the continuous sequential signal transmission when other temporary text and/or graphics are present on screen.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.
6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output,



means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded and characterised by means to trigger automatic recording of the continuous sequential signal transmission when other temporary text and/or graphics are present on screen.

7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 in which the control means initiates operation of a video cassette recorder on commencement of the write command or at a prescribed interval thereafter.
12. Apparatus as claimed in claim 11 in which actuation of the videocassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon

selection of additional on screen menus, means being provided for temporarily displaying on screen graphics and/or text and/or video images, and the method comprising recording a version of the continuous signal transmission onto a digital storage medium, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed, and characterised in that the recording of the continuous signal transmission is commenced automatically when additional temporarily on screen graphic and/or text and/or video images are displayed.

15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.



✉ EPA/EPO/OEB  
D-80298 München  
☎ 089 / 2399 - 0  
Tx 523 656 epmu d  
Fax 089 / 2399 - 4465  
089 / 2399 - 4560

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Patenterteilungs-, Einspruchs- und Beschwerdeverfahren  
Patent grant, opposition and appeal procedures  
Procédures de délivrance, d'opposition et de recours  
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matters • Questions administratives concernant l'Office

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Gesamtblattzahl

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Switzerland

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European Patent Office

Erhardstrasse 27  
D-80298 Munich

Bemerkungen • Remarks • Remarques

Please find enclosed a new International  
Preliminary Examination Report.

The old one dated 06.07.2000 should  
be deleted.

31.08.00

Datum • Date

p.p. Schalingers

Unterschrift • Signature

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 07 JUL 2000

WIPO

PCT

Applicant's or agent's file reference <b>SMC/LF/P4107</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/GB99/02334</b>	International filing date (day/month/year) <b>20/07/1999</b>	Priority date (day/month/year) <b>20/07/1998</b>
International Patent Classification (IPC) or national classification and IPC <b>H04N5/76</b>		
Applicant <b>DANMERE LIMITED et al.</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☐ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  <b>18/02/2000</b>	Date of completion of this report  <b>06.07.2000</b>
Name and mailing address of the international preliminary examining authority:   <b>European Patent Office</b> <b>D-80298 Munich</b> <b>Tel. +49 89 2399 - 0 Tx: 523656 epmu d</b> <b>Fax: +49 89 2399 - 4465</b>	Authorized officer  <b>Luckett, P</b>  Telephone No. <b>+49 89 2399 8965</b>



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/02334

**I. Basis of the report**

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

**Description, pages:**

1-10 as originally filed

**Claims, No.:**

1-16 as received on 28/03/2000 with letter of 14/01/2000

**Drawings, sheets:**

1/4-4/4 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.  
☒ claims Nos. 1-16.

because:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/02334

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☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-16 are so unclear that no meaningful opinion could be formed (*specify*):

**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos. .

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

- 1 The independent claims are rendered obscure (Art 6, PCT) by the nested nature of the alternative feature combinations introduced by the terminology "... comprising at least one of ..." followed by a list of features some of which themselves include alternative formulations "... and/or ...". The resultant claims thus lead to a correspondingly high number of possible interpretations which place an undue burden upon the public in attempting to ascertain their precise intended scope.

**Re Item VIII**

**Certain observations on the international application**

- 2 All claims appear to lack an **inventive step** (Article 33(3) PCT) having regard to the state of the art as disclosed in:-

D1: US-A-5 438 423 (LYNCH ET AL.) 1 August 1995 (1995-08-01)

D2: WO 98 25404 A (INTERVAL RESEARCH CORPORATION) 11 June 1998 (1998-06-11)

- 3 In D1 time warping for video viewing is achieved by providing a random access dynamic buffer for a video signal from a selected video channel. The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the real-time video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer. In addition the viewer may view the video at various speeds and skip to any point in the stored information. Portions of the video signal in the dynamic buffer may be stored in a static buffer **or transferred permanently to a video cassette recorder** for subsequent manipulation by the viewer. To expand the capacity of the dynamic buffer a compression circuit may be provided for compressing the video signal before being written into the dynamic buffer. Likewise a decompression circuit for

the compressed video signal from the dynamic buffer reconstructs a full bandwidth video signal for display.

- 4 In so far as they have any clear technically limiting effect over the disclosure of D1, minor linguistic or technical differences between the independent claims 1, 6 and 14 and the prior art of D1, (e.g. "automatically recording" , "automatically instigating" , "means to trigger", control means to "automatically instigate" VTR recording) all concern routine measures normally to be expected of a skilled person and therefore are not considered to imply an inventive step. Moreover, the terminology used in the independent claims, does not clearly limit the claims to a television signal as constituting the "... continuous sequential signal transmission ...". This vague expression reads on to a commonly known Teletext signal which is received and stored in precisely similar fashion to the vague terms used in some of the alternative feature combinations implied by the obscure terminology of the independent claims.
- 5 The D2 system enables the display of an image to be paused, then, at the end of the pause, resumed at an accelerated rate until a time at which the content of the display corresponds to the content that would have been displayed had the image been displayed at the normal display rate without the pause, at which time display of the image at the normal display rate resumes.
- 6 Compared with this state of the art, the dependent claims also relate to routine measures normally to be expected of a skilled person and also lack inventive step.
- 7 It is not at present apparent which part of the application could serve as a basis for a new claim.
- 8 The independent claim/s/ are not cast in the two part form, with those features which in combination are part of the prior art (see document D1) being placed in the preamble. **This considered to be particularly appropriate** in the present case as it is regarded as **essential** to establishing a clear picture of the contribution made by the applicants vis-a-vis the closely relevant subject matter known from D1.



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB99/02334

- 9 Claims 15 and 16 (including unnecessary references to the description and drawings) are so-called "omnibus" claims which are not permitted by some patent granting authorities.
- 10 The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 11 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein. To reflect the state of the art adequately in the description, the document D1 should be identified in the opening pages and the relevant background art disclosed therein should be briefly discussed.

CLAIMS

1. A method permitting the delayed viewing of a continuous sequential signal transmission, the method comprising recording a digitised version of the continuous sequential signal transmission on an ongoing basis onto a digital recording medium, and subsequently reading the recorded signals whilst continuing to record the real time transmissions onto the said digital recording medium, and converting the recovered signals into a screen readable form and viewing on a television, and further comprising at least one of: -
  - 1) automatically recording the continuous sequential signal transmission when other temporary text and/or graphics are present on screen;
  - 2) automatically instigating operation of a video cassette recorder to act as a supplemental storage medium for the continuous sequential signal transmission.
2. A method as claimed in claim 1 in which the recording medium is divided into a plurality of memory blocks and the method comprises recording said blocks sequentially.
3. A method as claimed in claim 1 or 2 and further comprising writing over previously recorded memory block when the available capacity of unrecorded memory blocks is exceeded.
4. A method as claimed in anyone of the preceding claims and further comprising the step of instigating operation of a video cassette recorder to record the signal transmission.
5. A method as claimed in anyone of the preceding claims in which instigation of the recording or reading step is selected from an on-screen menu.

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6. Apparatus to permit the delayed viewing of a continuous sequential signal transmission, the apparatus comprising means to receive and process the continuous sequential signal transmission and where necessary to convert into a digital output, means to write the signal to a storage medium and means to read a signal recorded on the storage medium, the write and read means being operable simultaneously to permit reading of previously recorded signals whilst signals currently being received are being recorded and further comprising at least one of: -
- 1) means to trigger automatic recording of the continuous sequential signal transmission when other temporary text and/or graphics are present on screen;
  - 2) control means automatically instigate operation of a video cassette recorder to act as a supplemental storage medium for the continuous sequential signal transmission.
7. Apparatus as claimed in claim 6 in which the storage medium comprises a plurality of recordable segments.
8. Apparatus as claimed in claims 6 or 7 and further comprising control means to instigate write and read functions.
9. Apparatus as claimed in claims 6, 7 or 8 and comprising means to generate an on-screen display from which the write and read options can be selected.
10. Apparatus as claimed in anyone of claims 6 to 9 comprising means identifying where in the memory the current write command was commenced and means for directing the read head to commence reading from the same place on receipt of a read command.
11. Apparatus as claimed in anyone of claims 6 to 10 in which the control means initiates operation of a video cassette recorder on commencement of the write

command or at a prescribed interval thereafter.

12. Apparatus as claimed in claim 11 in which actuation of the video cassette recorder is selected from an on-screen display as one of a number of options.
13. Apparatus as claimed in anyone of claims 6 to 12 in which the storage medium is one of a hard disk or a digital video disk.
14. A method permitting the delayed viewing of a continuous signal transmission upon selection of additional on screen menus, the method comprising automatically recording a version of the continuous signal transmission onto a digital storage medium when additional temporarily on screen graphic and/or text and/or video images are displayed, re-commencing delayed read of digitally stored signal and displaying same when prompted or automatically when said temporarily on screen graphics and/or text and/or video images are no longer displayed.
15. A method permitting the delayed viewing of a continuous sequential signal transmission substantially as hereinbefore described with reference to the accompanying drawings.
16. Apparatus to permit the delayed viewing of a continuous sequential signal transmission constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>SMC/RC/P4107</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 99/ 02334</b>	International filing date (day/month/year) <b>20/07/1999</b>	(Earliest) Priority Date (day/month/year) <b>20/07/1998</b>
Applicant <b>DANMERE LIMITED et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

1



None of the figures.

## Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The abstract is modified as follows:

line 4: after "medium" insert "(s)";  
line 6: after "a television" insert "(TV)";  
line 8: after "receive" insert "(r)";  
line 8: after "process" insert "(C,D,E)".

## INTERNATIONAL SEARCH REPORT

International Application No

T/GB 99/02334

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N5/76

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 438 423 A (LYNCH ET AL.) 1 August 1995 (1995-08-01)	1-4, 6-8, 10, 11, 13, 15, 16
Y	the whole document	12, 14
X	WO 98 25404 A (INTERVAL RESEARCH CORPORATION) 11 June 1998 (1998-06-11)	1-3, 5-10, 13, 15, 16
Y	page 10, line 18 -page 20, line 20; figures 1-3	12, 14
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

9 November 1999

Date of mailing of the international search report

16/11/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Verleye, J

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 99/02334

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 713 334 A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.) 22 May 1996 (1996-05-22) column 7, line 39 -column 10, line 14; figures 1-3B	1-3, 6-8, 10, 15, 16
A	-----	14



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/02334

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5438423	A	01-08-1995	JP 7107439	A	21-04-1995
WO 9825404	A	11-06-1998	US 5825354	A	20-10-1998
			AU 5515598	A	29-06-1998
EP 713334	A	22-05-1996	CN 1151081	A	04-06-1997
			JP 8237592	A	13-09-1996
			US 5822493	A	13-10-1998